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DEVICE FOR WRINGING OUT THE MATERIAL OF DOMESTIC CLEANING TOOLS KNOWN AS MOPS

DESCRIPTION

The prior art includes devices for wringing out domestic cleaning tools
5 of the mop type (comprising a plurality of flexible absorbent strips or filaments
of cotton or the like), which comprise by way of a wringer element a tubular
member with multiple helical turns which, when torsion is applied between the
two ends of said element, produces a centripetal radial compression of the
tool which has been inserted axially inside the turns.

10 Wringer devices of this kind are disclosed in US Patents
Nos. 5 060 338 and 5 724 694, in Canadian Patent Appl. No. 2 336 517, in
FR Pat. No. 848 688, and in CH Pat. No. 178 794 and No. 287 161.

The invention relates to an improved and simplified device that is also
more practical for the user to use.

15 The device in question essentially comprises: a sleeve with holes,
capable of accommodating the tool and being extended in the form of a
handgrip which is axially perforated to allow the stick to which the tool is
attached to be accommodated in it in a sliding manner; and a wringer element
in the form of flexible helical turns extending between an inner annular
20 extremity and an outer annular extremity, the outer annular extremity being
engaged on the terminal edge of the sleeve and the inner annular extremity
forming an extension that can be fitted onto and coupled rotationally to the
stick of the tool. Wringing is performed by a longitudinal movement between
the stick of the tool and the device, to pass the tool into the wringer element
25 inside the sleeve, a torsional movement between the tool and the device, and
the corresponding reverse movements.

In practice, the extension of the inner annular extremity of the wringer
element has a cavity that is at least partly of polygonal and in particular
octagonal or optionally square section; the tool in turn has a head shaped
30 correspondingly so as to fit into said cavity of the extension of the wringer
element, thus bringing about rotational coupling with the stick.

The head of the tool is screwed onto the end of the stick so as to be
removable from it; easy replacement of the worn tool is thus possible.

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A clearer understanding of the innovation will be gained from the description and the accompanying drawing, the latter showing a practical, non-restrictive example of the innovation. In the drawing:

- fig. 1 shows a sectional view of the device;
 - 5 fig. 2 shows a view of the device when the tool is outside the sleeve;
 - fig. 3 shows a detail view of the threaded attachment between the stick and the tool;
 - fig. 4 shows a top view of the tool taken on IV-IV as marked in fig. 3;
 - 10 fig. 5 shows a cross sectional view of the device;
 - fig. 6 shows the device when the tool is retracted into the sleeve;
 - fig. 7 shows a partial sectional view of the device when the tool is retracted into the sleeve;
 - 15 fig. 8 shows a perspective view of the wringer element, the stick and the tool;
 - fig. 9 shows a partial perspective view of the mechanism whereby the stick is slid into the axially perforated handgrip;
 - fig. 10 shows a cut-away view, when the tool is retracted inside the sleeve; and
 - fig. 11 illustrates the wringing operation.
- 20 As illustrated in the accompanying drawing, 1 is a general reference for the mop-type tool which comprises a head 1A, which is at least partly of octagonal (or more generally polygonal) section and terminates with a lead-in chamfer around a threaded hole 1B for receiving the threaded end 3A of the stick 3 with which the tool 1 is worked. The tool 1 is completed by a plurality of
- 25 strips 1C of flexible and absorbent material: these do the cleaning and must be wrung out frequently to expel the dirty cleaning liquid and enable the cleaning operation to be continued.

It is precisely to simplify the wringing out of the strips or cords of cotton 1C of the tool 1 that the present device is provided, in combination with the 30 stick 3 and with the tool 1 mounted on this stick.

The device in question comprises a cylindrical sleeve 5 that continues at 5A to form at its end a handgrip 7, which may optionally be padded with a thickness of e.g. rubber or other material. Towards the terminal edge 5B of

- the sleeve 5 are holes, especially slots, 5C for the expelled water to drain out, and windows and molded regions to receive a wringer element (described below) which is housed inside the sleeve 5, and into which the tool 1 is to be inserted. This wringer element, indicated by the general reference 9,
- 5 comprises an outer annular extremity 9A and an inner annular element 9B, the two annular elements 9A and 9B being connected to each other by a plurality of helical turns 9C of ribbonlike form in order to be contained within an essentially cylindrical virtual geometrical surface on the inside of the sleeve 5. The outer annular extremity 9A is provided with protuberances 9E which
- 10 engage firmly in the corresponding windows and molded regions created in the terminal edge 5B of the sleeve 5. The inner annular extremity 9B of the wringer element forms an extension 9F containing a cavity 9G which in cross section is at least partly polygonal and in particular octagonal in order to be able to accommodate and engage angularly with the head 1B of the tool 1 by
- 15 a relative axial movement. In this way, the assembly formed by the tool 1 with its stick 3 engages in rotation with the annular extremity 9B of the wringer element 9, when the stick 3 and tool 1 are slid as shown by arrow f1 relative to the sleeve 5 and to the wringer element. Essentially, the assembly of the stick 3, which is housed in the extension 5A and inside the handgrip 7, can
- 20 slide relative to the sleeve 5 with its extension 5A, 7 axially, moving the tool 1 together with its head 1A engaged on the thread 3A of the stick 3. The tool 1 with the stick 3 can thus be slid in the direction of arrow f1 in order to insert the tool 1 into the wringer element 9 when said element is held with the turns 9C dilated and in contact with the inner surface of the sleeve 5, and in order
- 25 to extend the tool 1 out of the sleeve 5 in the opposite direction to arrow f1 to enable the tool 1 to be used, by immersing it in a cleaning liquid and manipulating it to clean a floor or the like. The tool 1 on the end of the stick 3 can easily be replaced by simply unscrewing the head 1A of said tool 1 from the thread 3A and replacing the worn tool with another tool ready for use.
- 30 To use the tool 1 as a mop, it is extended from the sleeve 5 as shown in fig. 2 and used with the aid of the stick 3, which projects below the edge 5B and above the handgrip 7. The wringer element 9 remains engaged inside the sleeve 5 with its turns dilated. When it is wished to wring out the strips 1C of

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the tool 1 to expel the dirty liquid, the stick 3 is slid in the direction of arrow f1 to draw the tool 1, 1A with its strips 1C inside the wringer element 9. The octagonal-section head 1A is thus advanced into the cavity 9G, which is of corresponding shape, inside the extension 9F of the inner annular extremity 5 9B of the wringer element 9. The inner extremity 9B of the wringer element 9 is thus engaged on the stick 3. By rotating the stick 3 relative to the assembly 5, 5A, 7 as indicated by the two opposed arrows shown in figs. 2 and 11, a reciprocal torsion is set up between the outer 9A and inner 9B extremities of the wringer element 9. The effect of this rotation is to tighten the helical turns 10 9C, so causing radial compression of the strips 1C by the helical turns 9C and expelling the liquid from the strips 1C. The liquid runs out at the holes 5C and is thus removed. The extreme ends of the strips 1C remain at least partly unwrung, i.e. in the regions in which the helical turns are joined to the outer 15 9A and inner 9B extremities, where these helical turns cannot be constricted radially; however, the greater part of these helical turns 9C is easily tightened, compacting and squeezing the mass of strips 1C. The tool 1 can then be easily extended again from the sleeve 5 and from the wringer element 9 by simply rotating the assembly 5, 5A, 7 and the stick 3 in the opposite directions to those indicated in fig. 1, this operation causing the turns 9C to open again 20 until they are back in contact with the inner surface of the sleeve 5; immediately after which the tool 1 can be extended by pushing the stick in the opposite direction to arrow f1 relative to the assembly 5, 5A, 7 until the tool 1 is outside the sleeve 5, that is in the condition shown in fig. 2.

The device disclosed herein, comprising the components 5, 7, 9, 25 remains engaged on the stick 3 and the tool 1 can, as already indicated, easily be replaced, when worn, simply by unscrewing the head 1A from the thread 3A of the stick 3 and attaching a new tool 1 to this stick.

A handgrip similar to the handgrip 7, and adjacent to the latter, can be put on the stick 3 to facilitate wringing operations.

30 It will be understood that the drawing shows only an example, purely as a practical demonstration of the innovation, which innovation can be varied in its shapes and arrangements without thereby departing from the scope of the concept on which the innovation is based. The presence of any reference

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numbers in the appended claims is for the purpose of facilitating the reading of the claims with reference to the description and drawing, and does not limit the scope of protection represented by the claims.

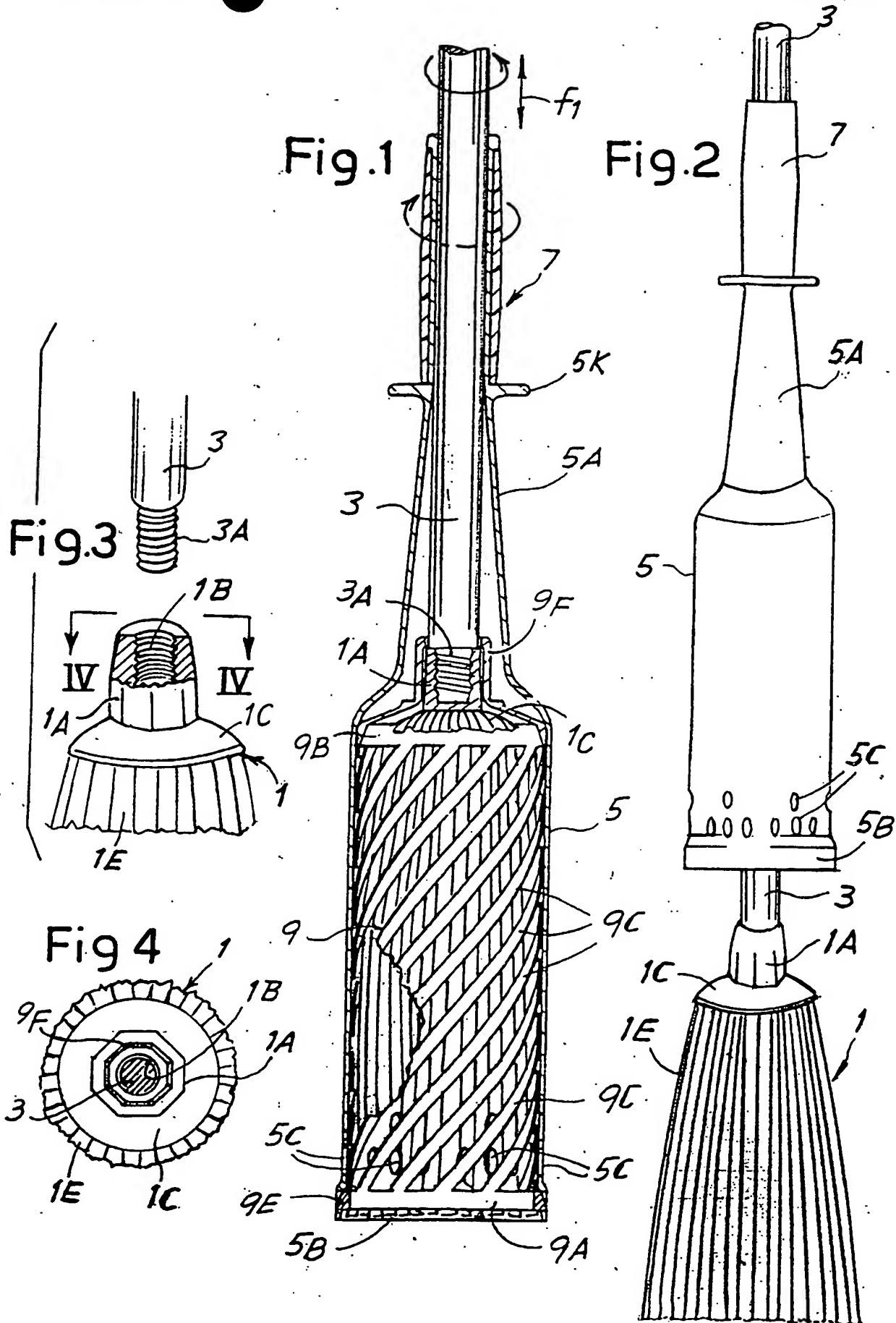
CLAIMS

1. A device for wringing out flexible strips (1C) of absorbent material of a domestic cleaning tool (1, 1A) known as a mop, equipped with a stick (3), said device being characterized in that it comprises in combination: a
5 sleeve (5) with holes or slots (5C), capable of accommodating the tool (1, 1A, 1C) and being extended in the form of a handgrip (7) having an axial hole through which said stick (3) can be passed; and a wringer element (9) in the form of flexible helical turns (9C) extending between an inner annular extremity (9B) and an outer annular extremity (9A), the outer annular
10 extremity (9A) being engaged on the terminal edge (5B) of the sleeve (5) and the inner annular extremity (9B) forming an extension (9F) that can be fitted onto and coupled rotationally to the stick (3) of the tool; wringing being performed by a longitudinal movement between the stick (3) of the tool (1) and the device (5), to pass the tool (1) into the wringer element (9) inside the
15 sleeve (5), and a torsional movement between the tool and the device, and by the corresponding reverse movements.

2. Device according to the previous claim, characterized in that said extension (9F) of the inner annular extremity (9B) of the wringer element (9) has a cavity (9G) that is at least partly of polygonal, and in particular
20 octagonal, section, and the tool (1) has a head (1A) shaped correspondingly so as to fit into said cavity (9G) of said extension (9F) of the wringer element (9), so as to be coupled rotationally to the stick (3).

3. Device according to claim 2, characterized in that said head (1A) of the tool (1) is screwed onto the end (3A) of the stick (3) so as to be
25 removable from it, in such a way as to allow easy replacement of the worn tool (1).

4. Device for wringing out the material of domestic cleaning tools known as mops; the whole as described above and as illustrated by way of example in the accompanying drawing.



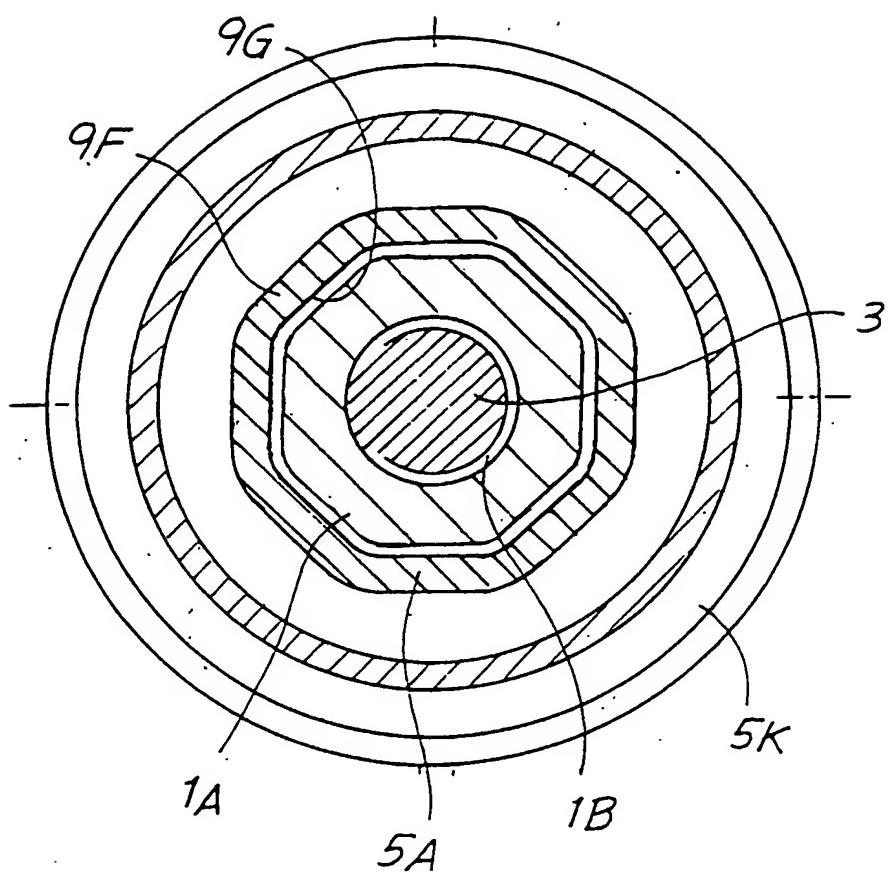


Fig.5

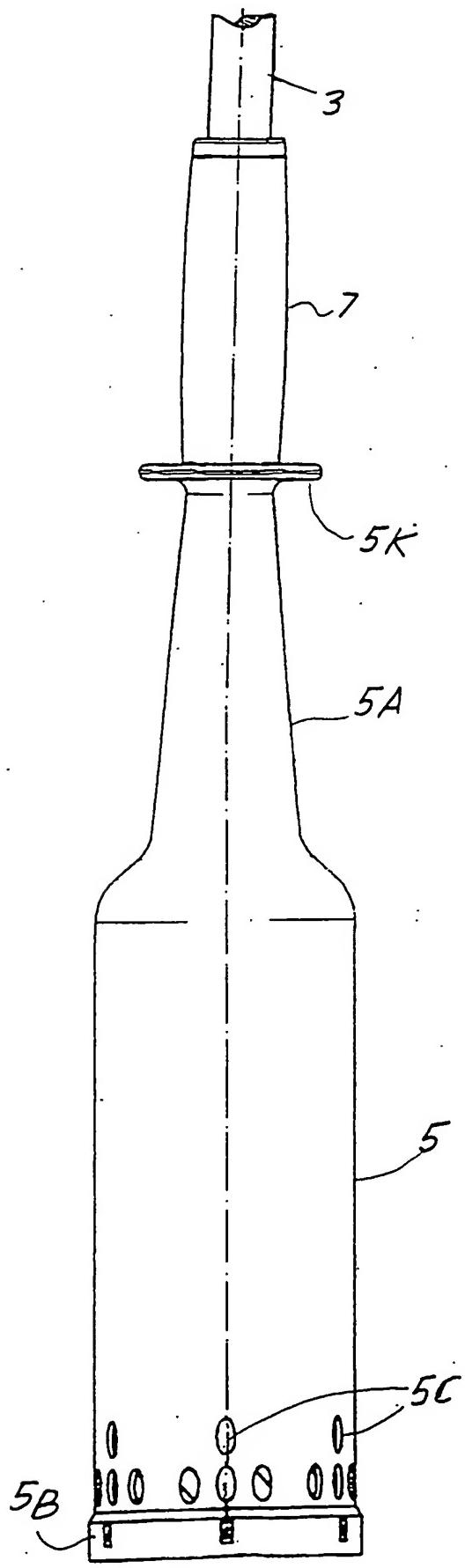


Fig.6

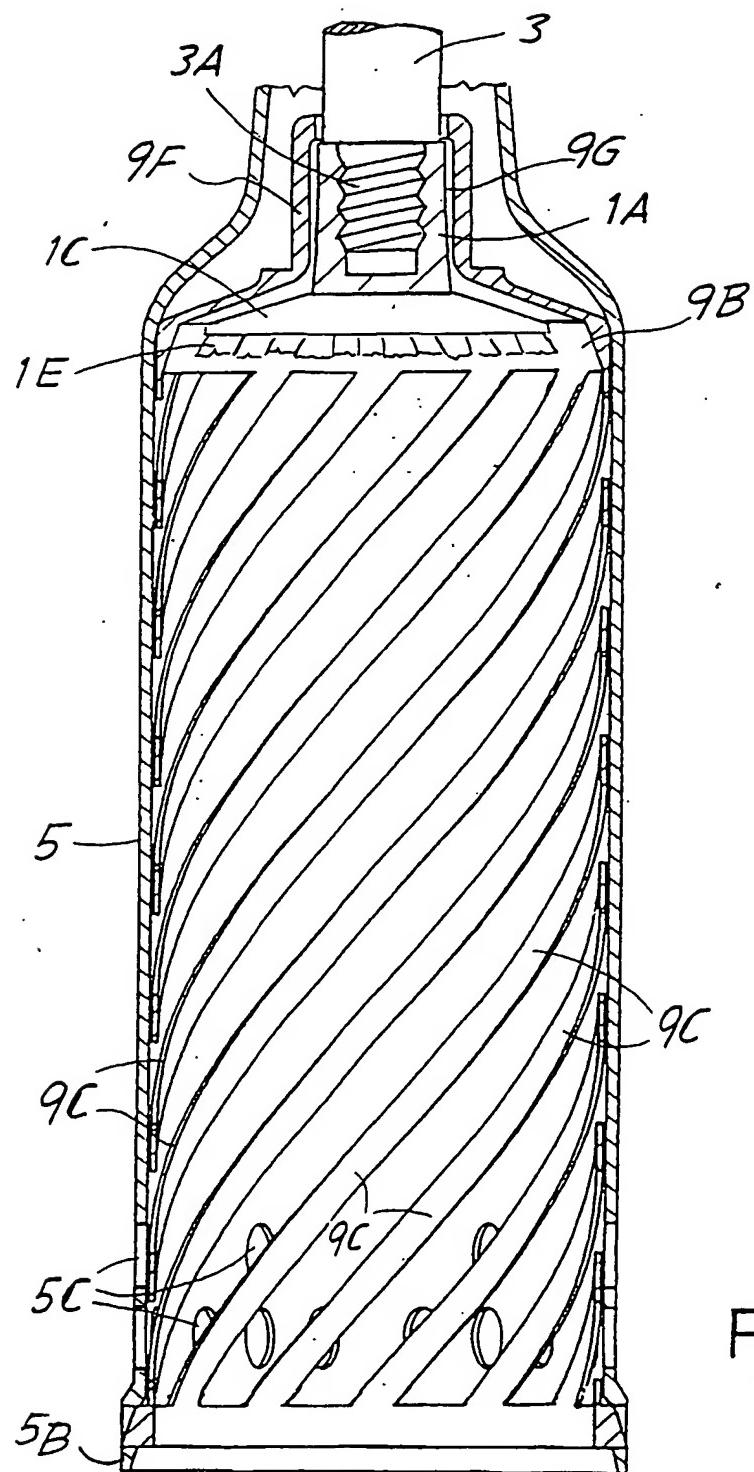


Fig.7

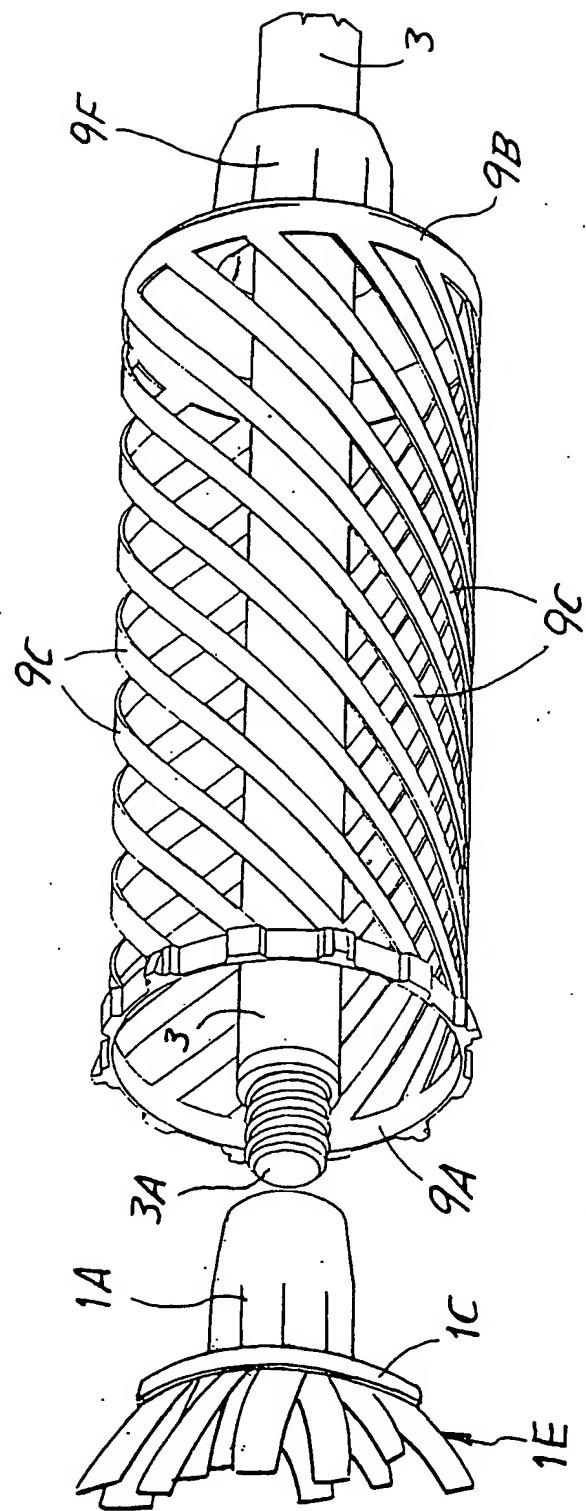


Fig.8

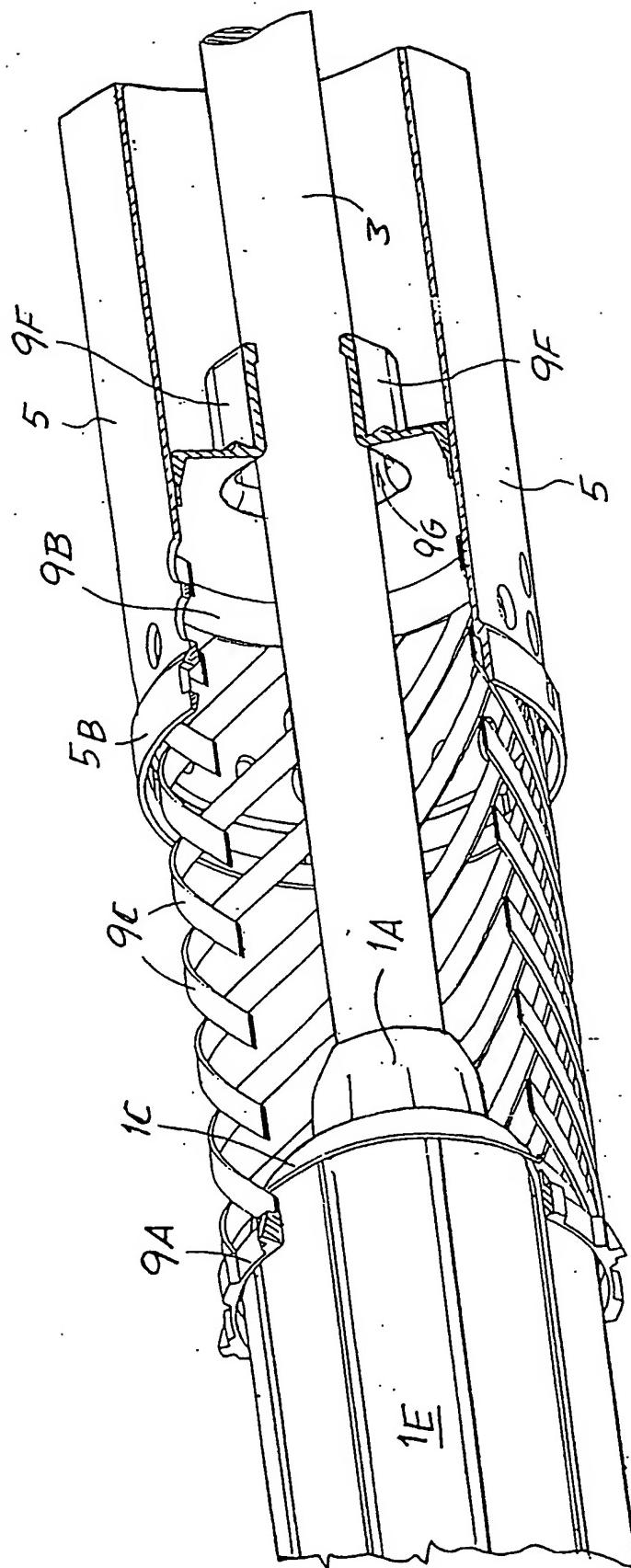
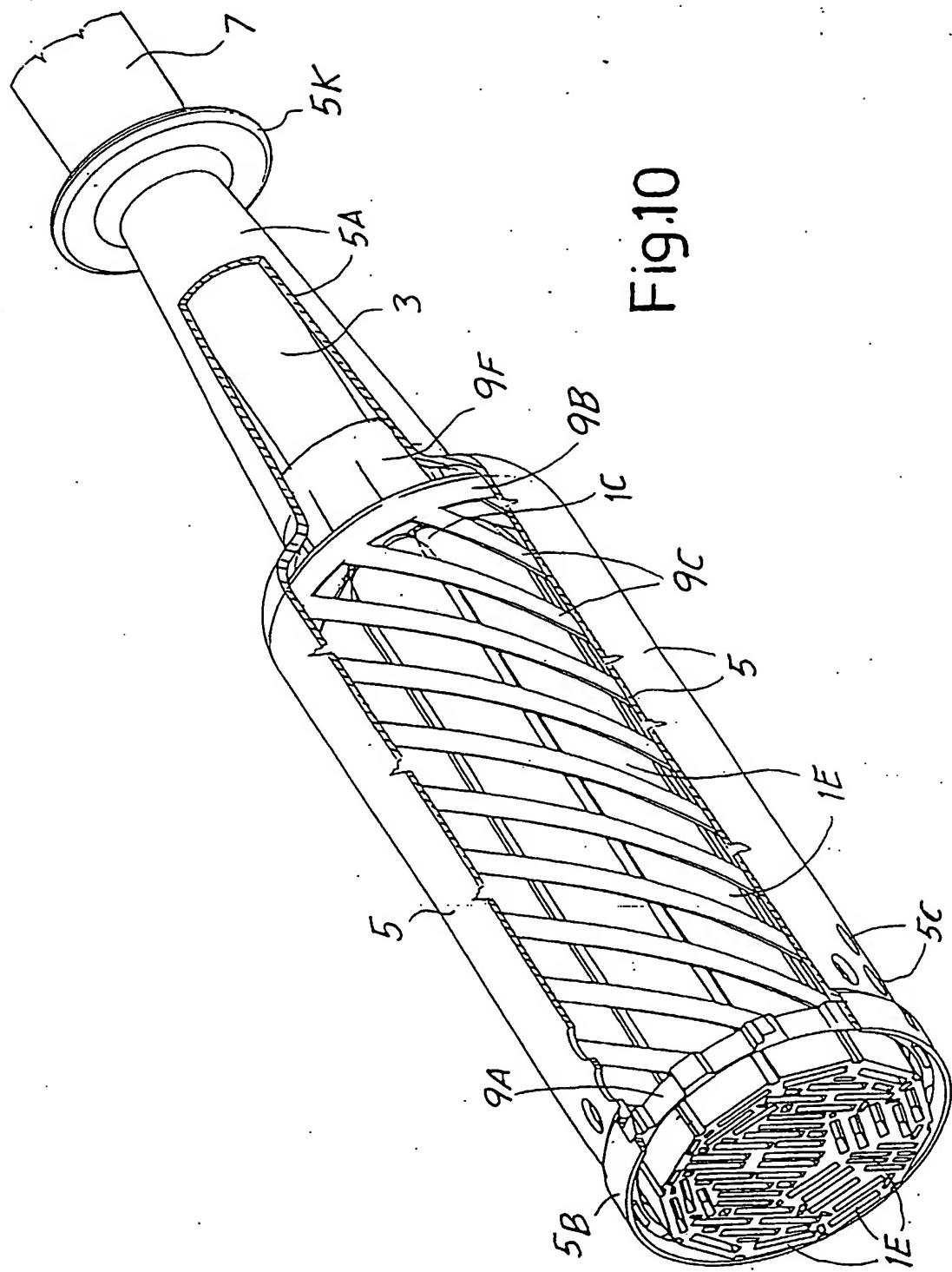


Fig. 9



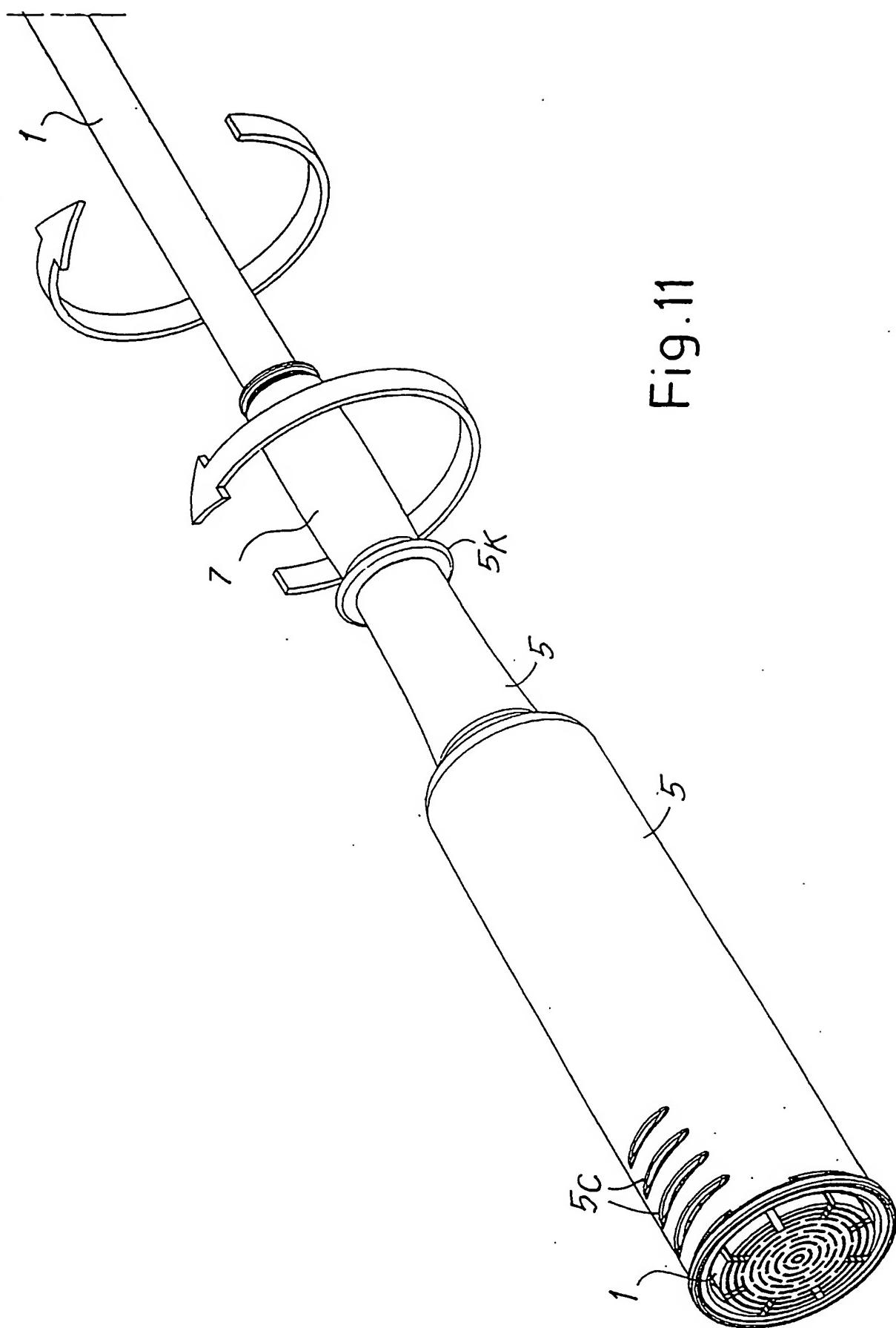


Fig. 11

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IT 03/00498

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47L13/142

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1 300 709 A (ANDREW TSANG NG FAI) 20 December 1972 (1972-12-20) ---	
A	US 6 427 280 B1 (SPECHT PAUL B) 6 August 2002 (2002-08-06) ---	
A	GB 390 265 A (HUBERT AMORY PREECE) 6 April 1933 (1933-04-06) ---	
A	FR 2 622 785 A (SPONTEX SA) 12 May 1989 (1989-05-12) ---	
A	US 4 561 141 A (TRISOLINI GEORGE S) 31 December 1985 (1985-12-31) ---	
A	US 2002/092105 A1 (ROTH ROBERT ET AL) 18 July 2002 (2002-07-18) -----	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 03/00498

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
GB 1300709	A	20-12-1972	NONE			
US 6427280	B1	06-08-2002	AU AU CA EP	751747 B2 2484601 A 2336517 A1 1180341 A2		29-08-2002 11-10-2001 02-09-2001 20-02-2002
GB 390265	A	06-04-1933	NONE			
FR 2622785	A	12-05-1989	FR	2622785 A1		12-05-1989
US 4561141	A	31-12-1985	AT AU DE EP	23792 T 2466784 A 3461418 D1 0119964 A1		15-12-1986 23-08-1984 15-01-1987 26-09-1984
US 2002092105	A1	18-07-2002	CA	2366890 A1		12-07-2002